ROBERT GORDON UNIVERSITY ABERDEEN

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MODULE DESCRIPTOR

Module Title

Machine Learning and Artificial Intelligence

Reference	CM3710	Version	1
Created	February 2019	SCQF Level	SCQF 9
Approved	May 2019	SCQF Points	30
Amended		ECTS Points	15

Aims of Module

To provide students with the ability to demonstrate the practical skills required for the development of intelligent systems, including the application of machine learning, in solving real-world problems.

Learning Outcomes for Module

On completion of this module, students are expected to be able to:

1	Demonstrate a critical understanding of the use of machine learning and artificial intelligence techniques in real-world applications.
2	Critically analyse the strengths and limitations of current machine learning and Artificial Intelligence techniques.
3	Compare and contrast the main techniques within machine learning and Artificial Intelligence.
4	Develop an intelligent system using suitable machine learning and/or Artificial Intelligence techniques to solve a given problem.

Indicative Module Content

Artificial Intelligence - definition, concepts, and examples. Intelligent behaviour-Search, Case-based reasoning, Genetic Algorithms. Problem solving and intelligent search. Supervised and unsupervised machine learning including neural nets, support vector machines, decision trees, probabilistic learning, instance-based learners, metric learning and clustering algorithms. Convolutional Neural Networks and Deep Learning. Real-World Applications. Ethical AI.

Module Delivery

The module is delivered in Blended Learning mode using structured online learning materials/activities and directed study, facilitated by regular online tutor support. Workplace Mentor support and work-based learning activities will allow students to contextualise this learning to their own workplace. Face-to-face engagement occurs through annual induction sessions, employer work-site visits, and modular on-campus workshops.

Indicative Student Workload	Full Time	Part Time
Contact Hours	30	N/A
Non-Contact Hours	30	N/A
Placement/Work-Based Learning Experience [Notional] Hours	240	N/A
TOTAL	300	N/A
Actual Placement hours for professional, statutory or regulatory body	240	

ASSESSMENT PLAN

If a major/minor model is used and box is ticked, % weightings below are indicative only.

Component 1

Type:	Coursework	Weighting:	50%	Outcomes Assessed:	3, 4

Description: This coursework will consist of an AI/machine learning development exercise.

Component 2

Type:	Practical Exam	Weighting:	50%	Outcomes Assessed:	1, 2

Description: This practical exam will consist of a presentation on aspects of applications of AI/machine learning within the workplace.

MODULE PERFORMANCE DESCRIPTOR

Explanatory Text

The calculation of the overall grade for this module is based on 50% weighting of C1 and 50% weighting of C2. An overall minimum grade of D is required to pass the module.

		Practical Exam:						
		A	**B**	**C**	**D**	**E**	**F**	**NS**
	A	A	A	B	B	C	E	
	B	A	B	B	C	C	E	
Coursework:	**C**	B	B	C	C	D	E	
	D	B	C	C	D	D	E	
	E	C	C	D	D	E	E	
	F	E	E	E	E	E	F	
	NS	Non-submission of work by published deadline or non-attendance for examination						

Module Requirements

Prerequisites for Module	None, in addition to course entry requirements.
Corequisites for module	None.
Precluded Modules	None.

INDICATIVE BIBLIOGRAPHY

1	RUSSELL, S. and NORVIG, P. 2016. Artificial Intelligence: A Modern Approach. 3rd ed. Pearson.
2	LEWIS, N. D. 2016, Deep Learning Step by Step with Python. CreateSpace Independent Publishing Platform.
3	RASHID T, 2016. Make Your Own Neural Network. CreateSpace Publishing.
4	FINLAY, S., 2017. Artificial Intelligence and Machine Learning for Business: A No-Nonsense Guide to Data Driven Technologies. Realtivistic.
5	SIEGEL, E. 2016. Predictive Analytics: The Power to Predict Who Will Click, Buy, Lie, or Die. John Wiley & Sons.